

CHAPTER 3

THE SOUND-POWERED TELEPHONE SYSTEM

LEARNING OBJECTIVES

Upon completing this chapter, you should be able to do the following:

- *Explain the use and care of sound-powered telephone equipment.*
- *Describe the different sound-powered phone circuits and how they are designated.*

SOUND-POWERED TELEPHONE EQUIPMENT

As a sound-powered telephone talker, you must be familiar with the use and care of all sound-powered equipment if you are going to be proficient at your job. In addition to headset-chestsets and handsets, sound-powered equipment includes jackboxes, selector switches, and call signal stations.

THE HEADSET-CHESTSET

Sound-powered telephone headset-chestsets (fig. 3-1) are designed for general shipboard use. The mouthpiece (transmitter) is suspended from a yoke attached to a metal chest plate. The earphones (receiver) are connected by an adjustable headband. The mouthpiece and earphones are connected by wire (tinsel cord) from a junction box on the chest plate. The plug cable is also connected into this junction. The jack plug is connected to the other end of the cable.

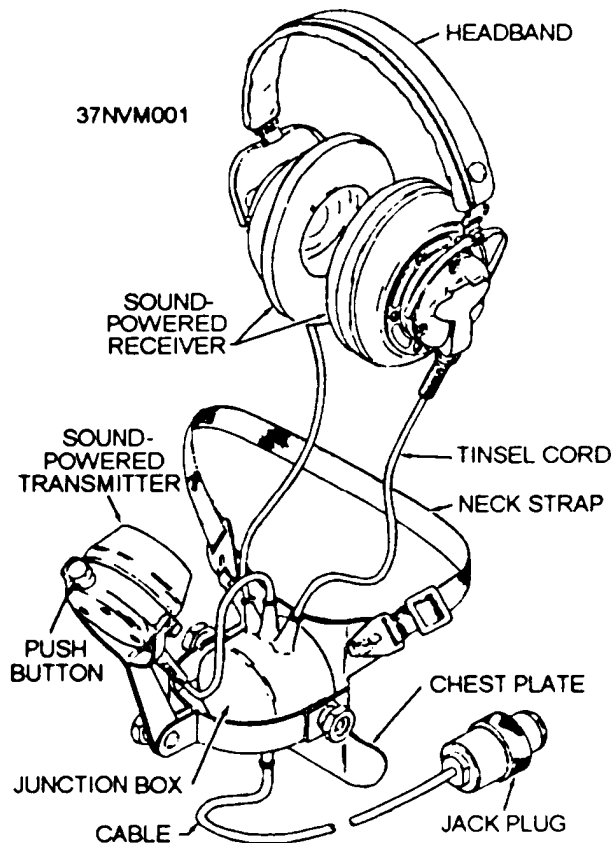


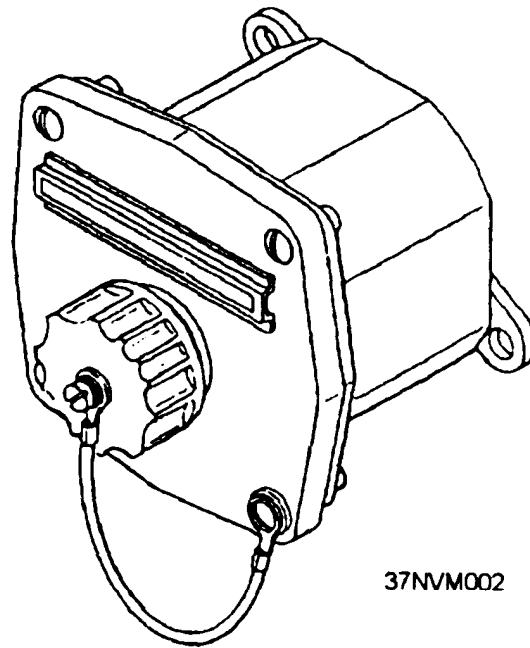
Figure 3-1.-Sound-powered telephone headset-chestset.

Handling the Headset-Chestset

Always handle sound-powered telephone headset-chestsets with care so that they will be working properly if an emergency occurs. When you are not using phones, make them up correctly and stow them in their proper place.

The sets are made as waterproof as possible, but you should not expose them unnecessarily to the weather. Do not drag the cables over sharp edges, pull on them too hard, or allow them to kink. When unplugging the cable from a jackbox, always pull on the body of the plug; never pull on the cable. Figure 3-2 shows a single-gang, sound-powered telephone jackbox.

Q1. What do you do with phones when they are not in use?



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Figure 3-2.-A single-gang sound-powered telephone jackbox.

Donning the Headset-Chestset

When donning the headset-chestset, you should use the following procedure:

1. Remove the set from the stowage hook or stowage box.
2. Hold the set and coiled cable in one hand.
3. Unhook the neck strap and unwind the coiled cable. Do not allow the set to dangle by its connecting wires; this could cause open leads and short out the phones.
4. Put the neck strap around your neck and secure it to the chest plate.
5. Put on the earphones and adjust the ear cushions for maximum comfort and to block out noise.
6. Straighten out any kinks in the connecting wires.

7. Remove the cover on the jackbox and connect the plug into the jack.
8. Test the headset for satisfactory operation. First, get someone to plug another headset into a separate jackbox on the same circuit. You can now conduct a phone check to ensure the phones are operating properly.

Q2. What precaution should you take in unplugging a cable from a jackbox?

Removing and Making Up the Headset-Chestset

To remove and make up a sound-powered telephone headset-chestset, you should use the following procedures:

1. Remove the earphones and hang the headband over the yoke of the transmitter.
2. Remove the plug from the jackbox by holding the plug in one hand and unscrewing the collar with the other. When the collar is loose, grasp the plug and pull it out.
3. Replace the jack cover on the jackbox to keep out moisture and dirt.
4. Lay the cable out on the deck and remove any kinks.
5. Coil up the cable, starting from the end that attaches to the chest plate. Coil with the right hand, making the loops in a clockwise direction. The loops should be about 10 inches across.
6. After the cable is coiled, remove the headband from the transmitter yoke and hold the headband in the same hand with the cable.

7. Fold the transmitter yoke flat so that the mouthpiece lies flush against the chest plate connection box, using care not to pinch the transmitter cable.
8. Hold the headband and cable in the left hand and unhook one end of the neck strap from the chest plate.
9. Bring the top of the chest plate level with the headband and cable. Secure the chest plate in this position by winding the neck strap around the headband and coiled cable just enough times that a short end will be left over. Twist this end once and refasten it to the chest plate. The set is now made up and ready for stowing. Figure 3-3 shows a properly made up sound-powered telephone headset-chestset.

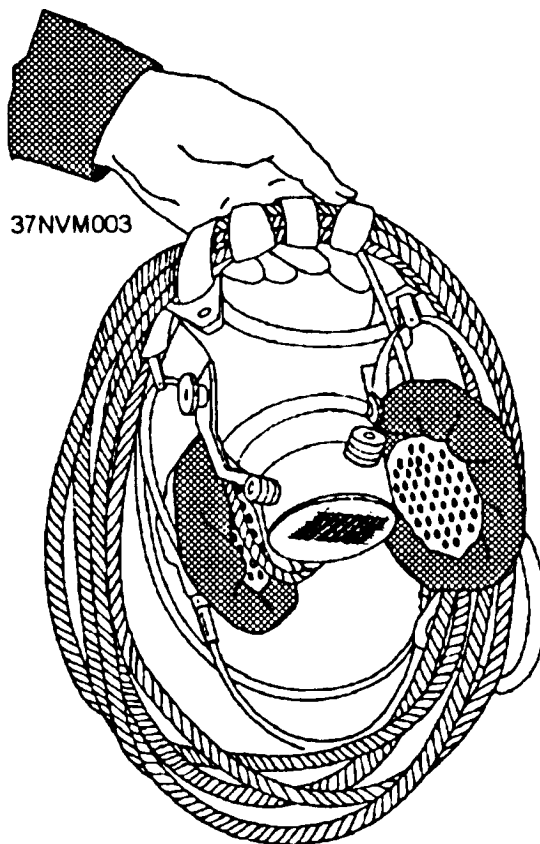


Figure 3-3.-A properly made-up sound-powered telephone headset-chestset.

Stowing the Headset-Chestset

In enclosed spaces, you should stow headset-chestsets on hooks. In machinery spaces and on weather decks, you should stow these sets in stowage boxes, which are designed to stow from one to six sets.

A properly made-up set should fit into its stowage box without your having to force it. Never allow a loose cable to hang out of the box, because it may be damaged when the lid is closed. Never use the stowage box for storing cleaning gear or tools. Cleaning rags give off moisture while chemicals give off fumes that will cause the aluminum diaphragms to rapidly oxidize. Tools and other loose gear may damage the set(s) or may prevent you from getting a set out quickly in an emergency situation.

Q3. Where do you store headset-chestsets located on weather decks and in machinery spaces?

Q4. Why should you never store cleaning gear in a sound-powered phone stowage box?

THE HANDSET

Sound-powered telephone handsets are designed for general use on a line with other handsets or headset-chestsets. You hold the handset in one hand with the receiver over one ear and the transmitter in front of your mouth. You push down the button, located between the transmitter and the receiver, for talking as well as listening.

Sound-powered handsets are hard-wired into sound-powered jackboxes, selector switches, and magneto call stations. For stowage of the handsets, handset holders (fig. 3-4) are installed in enclosed spaces, and handset stowage cabinets are installed at stations exposed to the weather. When you replace the handset in its holder, be sure it is secured so that it cannot fall to the deck and be damaged.

Q5. Why should you replace the handset in its holder and make sure it is secure?

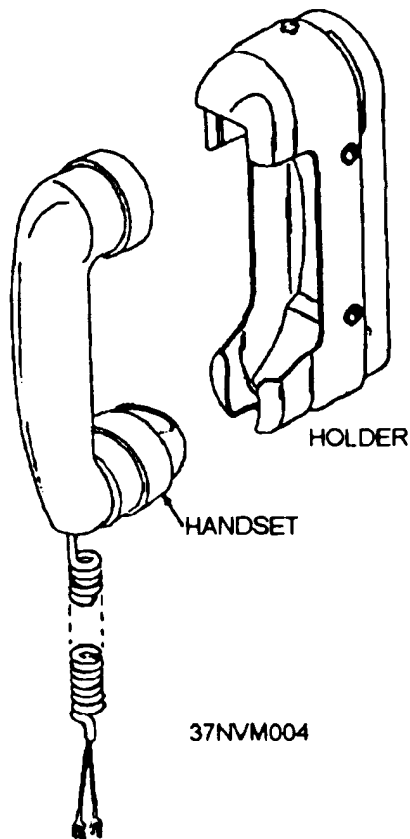


Figure 3-4.-The sound-powered telephone handset and handset holder.

THE SELECTOR SWITCH

Sound-powered telephone selector switches (fig. 3-5) are located throughout the ship at control and operating stations served by more than one sound-powered telephone circuit. The selector switch enables you to talk on any one of several circuits by turning the rotary dial on the switch to the desired circuit. Most of the switches are installed with a sound-powered telephone handset hard-wired into the switch. In areas where a handset is not provided, you must insert a headset-chestset plug into the jack outlet. Selector switches located in normally darkened condition areas are provided with dial illumination.

- Q6. *When talking from a station with a selector switch, how do you shift from one circuit to another?*
- Q7. *Selector switches in darkened-ship condition areas are provided with what special feature?*

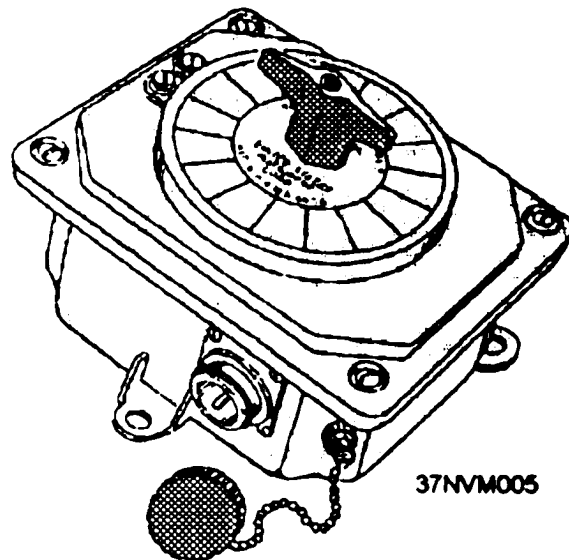


Figure 3-5.-The selector switch.

SOUND-POWERED TELEPHONE CIRCUITS

The sound-powered telephone system consists of individual sound-powered telephone circuits. As stated earlier in chapter 1, each circuit operates without any external source of electrical power. The number and various types of circuits installed depends on the operational requirements of the ship.

TYPES OF CIRCUITS

There are three types of sound-powered telephone circuits: (1) switchboard, (2) switch box, and (3) string. A switchboard circuit originates from a sound-powered telephone switchboard. A switch box circuit originates from a sound-powered switch box. A string circuit consists of a series of telephone station jackboxes connected to a common line.

Q8. From what component does the switchboard circuit originate?

Q9. What components are in a string circuit?

CLASSIFICATION OF CIRCUITS

Sound-powered telephone circuits are divided into three classifications based on their usage: primary, auxiliary, and supplementary.

Q10. What are the three classifications of sound-powered phone circuits?

Primary Circuits

Primary circuits provide communication for primary control and operating functions associated with ship control, weapons control, engineering control, and damage control. Primary circuits are designated by the letters *JA* through *JZ*. (Specific circuit designations are labeled on the front of each jackbox.)

Auxiliary Circuits

Auxiliary circuits duplicate certain principal primary circuits as an alternate means of communication if damage occurs to the primary circuit. The wiring of auxiliary circuits is separated as much as practicable from the wiring of the corresponding primary circuits. Auxiliary circuits have the same letter designation as primary circuits, except they are preceded by the letter *X*. Examples: *XJA*, *X1JV*, and *X1JG*.

Q11. What special precaution has been taken to prevent simultaneous damage to both primary and auxiliary circuits?

Q12. How can you tell the difference between primary and auxiliary circuit designations?

Supplementary Circuits

Supplementary circuits consist of several short, direct circuits, such as those from the bridge to the quarterdeck or from the quarterdeck to the wardroom. Supplementary circuits, designated *X1J* through *X61J*, are normally string circuits. Circuits in

primary and auxiliary systems can be tied together at various switchboards, or individual stations may be cut out of the circuits; but the supplementary system does not have these provisions.

Circuits in the supplementary system are usually not manned. Some supplementary circuits are equipped with a buzzer or a horn for calling another station. The supplementary circuit you will use the most is the call signal station (fig. 3-6). To call another station, you turn the station selector switch to the station you want to call and then turn the hand crank. The hand crank operates a magneto generator that produces a distinctive howl (an audible noise). The howl will continue as long as you crank the generator.

Q13. How do you call another station from a call signal station?

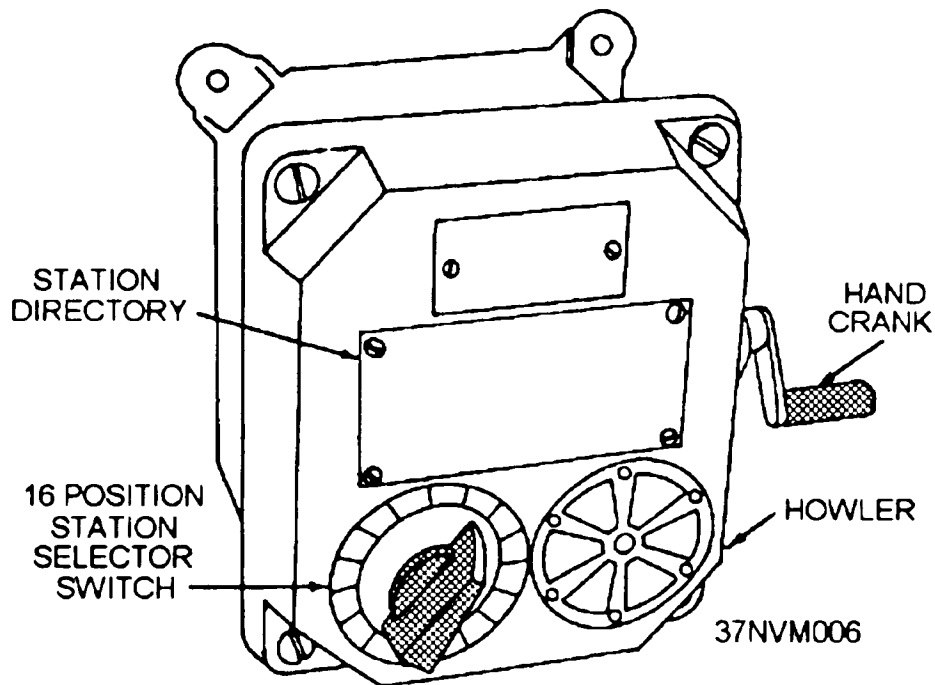


Figure 3-6.-A call signal station.

CIRCUIT DESIGNATIONS

Circuit designations are characterized by a letter and number code. The 21JS4 primary battle circuit, for example, is identified as follows: the numerals 21 indicate the purpose of the circuit; the letter *J* denotes sound power; the letters *S* means general purpose (radar, sonar, and electronic countermeasures [ECM] information); and the numeral 4 indicates a particular station in the circuit. The same circuit in the auxiliary system is X21JS4. All auxiliary and supplementary circuit designations are preceded by the letter X. Supplementary circuits are easily identified as such because they have no letter after the letter *J*.

Q14. What does the letter J mean in sound-powered circuit designations?

Q15. How can you identify a supplementary circuit?

The following are some typical shipboard sound-powered circuit designations:

CIRCUIT DESIGNATION	CIRCUIT TITLE
JA	Captain's battle circuit
1JG	Aircraft control circuit
JL	Lookout circuit
1JS	Combat information center information circuit
21JS	Surface search radar circuit
61JS	Sonar information circuit
1JV	Maneuvering and docking circuit
4JV	Engineering circuit (fuel and stability)
JW	Ship-control bearing circuit
JX	Radio and signals circuit

CIRCUIT DESIGNATION	CIRCUIT TITLE
2JZ	Damage and stability control
4JZ	Forward repair circuit
X1JV	Auxiliary maneuvering and docking circuit
X2JZ	Auxiliary damage and stability control circuit
X1J	Ship's administration circuit
X8J	Replenishment-at-sea circuit

SUMMARY

An emergency on board ship is a real possibility you confront everyday. During emergency and routine evolutions, communications are of vital importance. You should make sure you know how to use your equipment. You should also make sure your equipment is in good shape so that it won't fail you at a critical time.

ANSWERS TO EMBEDDED QUESTIONS

- A1. *Make up the phones correctly and stow them in their proper place.*
- A2. *Always pull on the body of the plug; never on the cable.*
- A3. *In stowage boxes.*
- A4. *Because rags and chemicals give off moisture and fumes that will cause the aluminum diaphragms to rapidly oxidize.*
- A5. *So it cannot fall to the deck and be damaged.*
- A6. *Turn the rotary dial on the switch to the desired circuit.*
- A7. *They are provided with dial illumination.*
- A8. *From a sound-powered telephone switchboard.*
- A9. *A series of telephone station jackboxes connected to a common line.*
- A10. *Primary, auxiliary, and supplementary.*
- A11. *The wiring of the auxiliary circuits is separated as much as practicable from the wiring of the corresponding primary circuits.*
- A12. *Auxiliary circuit designations are preceded by the letter X.*
- A13. *Turn the station selector switch to the station you want to call, and then turn the hand crank.*
- A14. *Sound power.*

A15. The circuit designation has no letter after the letter J.